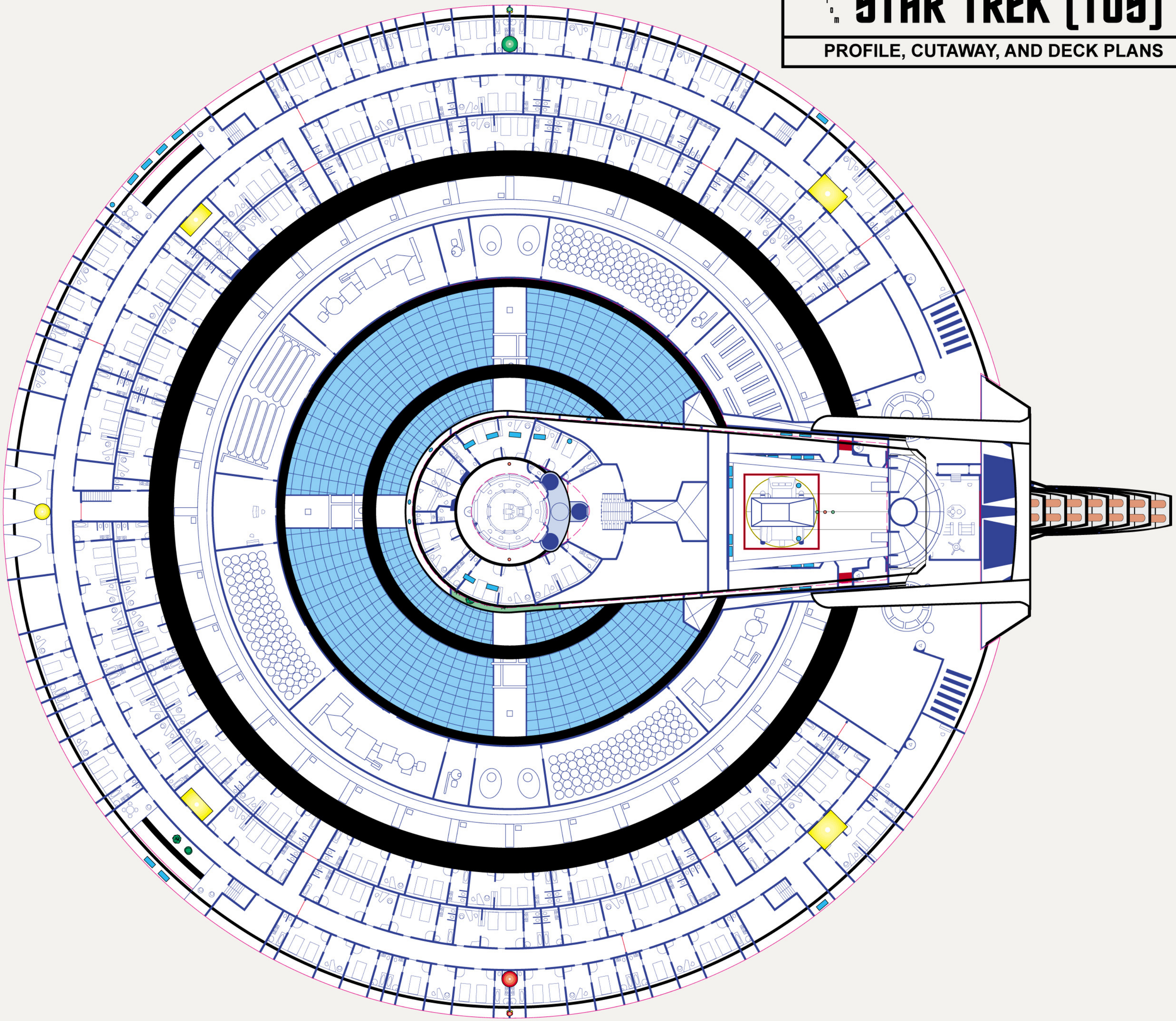
MASAO DESTROYER
from STAR TREK [TOS]

PROFILE, CUTAWAY, AND DECK PLANS



DRAWN BY: Jim Botaitis

STAR TREK - MASAO-CLASS DESTROYER

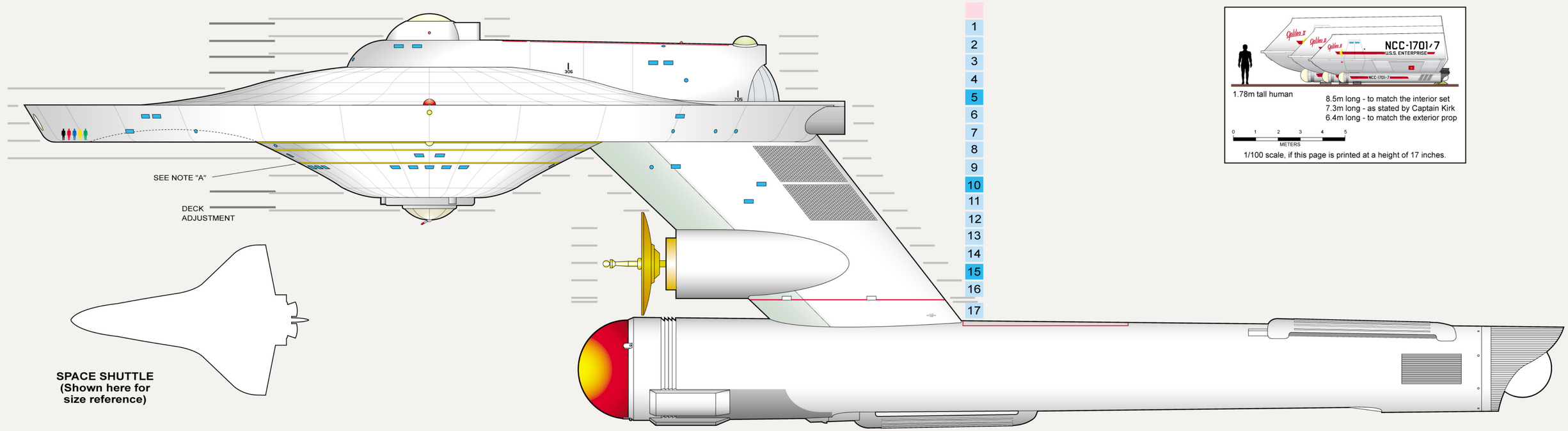
LAYOUT: PORT PROFILE PAGE 1 of 18

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0 5 10 15 20
METERS



1.78m tall human

8.5m long - to match the interior set
7.3m long - as stated by Captain Kirk
6.4m long - to match the exterior prop

0 1 2 3 4 5
METERS

1/100 scale, if this page is printed at a height of 17 inches.

BACKGROUND HISTORY

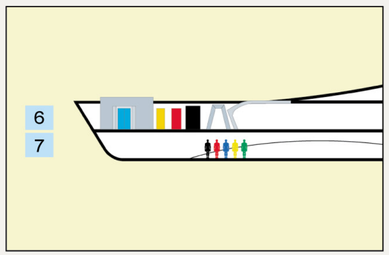
This project is an extrapolation of the U.S.S. ENTERPRISE drawings developed in the year 2020. Those drawings were governed by 3 criteria:
(1) The 11-foot-2.08-inch (3.4-meter) studio model,
(2) The Writer's Guide, and
(3) The 79 episodes plus the original pilot.
There are no such criteria to guide these drawings, but the basic design philosophy is to complete this ship in the same style that Franz Joseph (FJ) developed for his Technical Manual and in the same style as his Heavy Cruiser blueprints. The goal is to try and fit all the components inside the hull. But what are "all the components"? What are the roles of "Destroyers" in the STAR TREK universe?

A "Destroyer" was a type of ship used on Earth. It was a fast, maneuverable, long-endurance warship intended to escort larger vessels in a fleet, convoy or battle group and defend them against powerful short range attackers.
Some countries use the term "Frigate" for their "Destroyers" which leads to some confusion.
With the advent of missiles, "Guided Missile Destroyers" were developed to carry these weapons and protect the fleet from such threats. By the late 20th Century, many "Destroyers" were built with helicopter flight decks and hangars.

The Masao-class Destroyer was designed by Masao Okazaki. His drawings suggest there are three Phaser Banks and one Photon Torpedo Bank. Obviously, there is also a Hangar Bay in an extension added on top of the Primary Hull, at the rear. There is also a housing for a main sensor dish added to the ventral decks below the Primary Hull.

CONSTRUCTION NOTES

As with my Heavy Cruiser plans, I started at the edge of the primary hull (see image below), where the height of 2 decks, the thickness of 1 floor, and the thickness of 2 hulls have to fit in this part of the saucer.



In CHARLIE X we saw how thick the walls are and also what is in the walls. The DESILU plans show walls that are 1 foot (0.3 meters) thick and sometimes even thicker. I decided to make all walls, decks, and hulls 1 foot thick, never thinner. In a few places, the walls are even thicker.

This leaves a ceiling height of 8 feet (2.44 meters) for each level.

The one set piece (reminiscent of a ship's rib - often seen in the Briefing Room) does not quite fit. However, all the other details (doors, openings, etc) do fit (see image at left). I consider the trapezoidal openings to be Isolation Doors ... in case of hull breaches, damage control, intruder alerts, etc.

In the profile drawing (at the top of this page) the light grey horizontal lines show the initial deck locations. They represent a constant 8 foot ceiling throughout the entire ship.

I built them upwards and downwards from my starting point, Deck 6 and 7. However, this makes the Bridge too high, and Deck 11 too low. The dark grey horizontal lines show the adjusted deck locations. The ventral decks were not adjusted.

Disconnection equipment is located at the bottom of the ventral decks. The Matter-Antimatter Reaction Chamber is below that equipment, within the engine nacelle. These levels are heavily shielded. Because of the sensitivity of the disconnection equipment and the radiation, it makes sense to keep this area clear and difficult to access except by authorized personnel.

GENERAL NOTES

Are the wide steps in Engineering considered to be "stairs"? Are the steps on the Bridge considered to be "stairs"?
Perhaps stairs do not appear in any episodes, but that does not mean they do not exist in Starfleet ships. Therefore:
1. After engine nacelle disconnection and an emergency landing, stairs on Decks 4, 3, and 2 lead up to the hatch, thus allowing the crew to leave the ship quickly.
2. Each of the 2 Recreation Rooms on Deck 7 have balconies on Deck 6. Those balconies have stairs that lead down to their respective Recreation Rooms.
3. Stairs connect the two levels of the Deflector Equipment at the front of the hull.

Aside from these stairs, the rectangular ladders (within rectangular alcoves) and the triangular ladders (within circular alcoves) supplement the turbo-elevator system. If that system fails, or in some other emergency, ladders alone would not be very efficient; it is easier to carry something up stairs than up a ladder.

There are external features that do not need to be marked: hatches for the Phasers, hatches for the Photon Torpedo Launchers, and the Primary Hull / Warp Engine disconnection line, to name a few.
These drawings attempt to make sense of the markings that ARE visible on the studio model of the ENTERPRISE, all of which are then extrapolated onto this ship.

More notes relevant to each deck appear on the following pages.

Contradictions and errors exist within the episodes. I am sure 100% continuity is not possible.

I hope these pages provide you with some pleasure, information, and ideas for contemplation / consideration.

If I missed something, please let me know.

Jim Botaitis
jbot@rogers.com
July 2020

STAR TREK - MASAO-CLASS DESTROYER

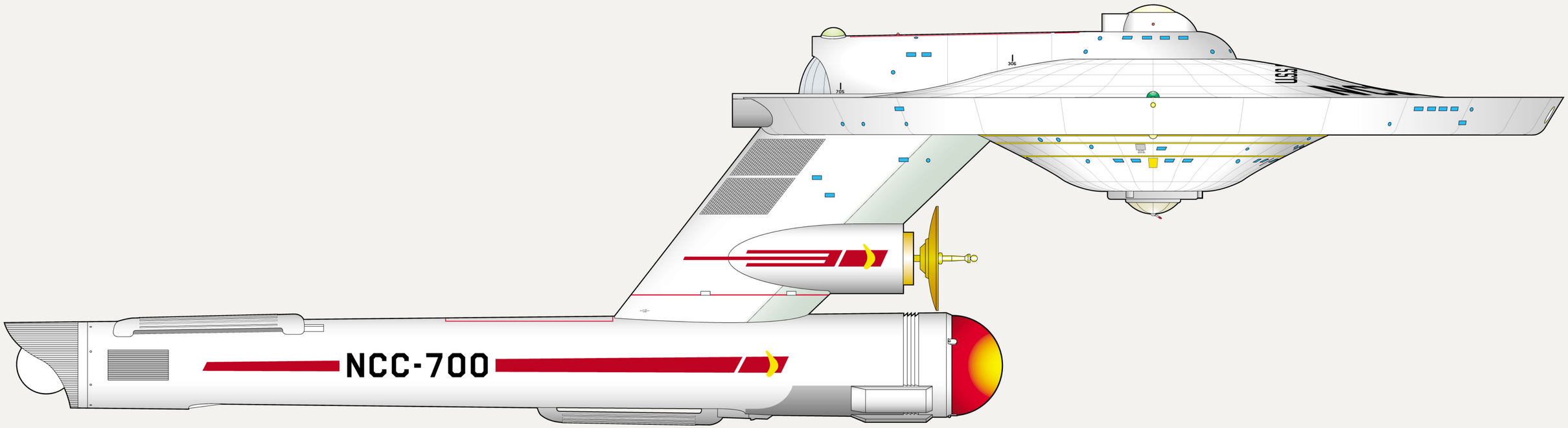
LAYOUT: STARBOARD PROFILE PAGE 2 of 18

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0 5 10 15 20
METERS



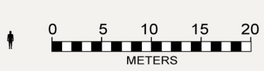
STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: TOP

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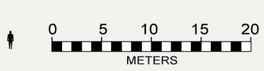
STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: BOTTOM PAGE 4 of 18

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NOTES

The landing legs have been deleted and replaced by hatches, as shown on Deck 7.

The undercut of Deck 7 is shown here with the grey shading.

A lopsided bowtie-shaped area was flattened at the rear to allow access to Engineering.

STAR TREK - MASAO-CLASS DESTROYER

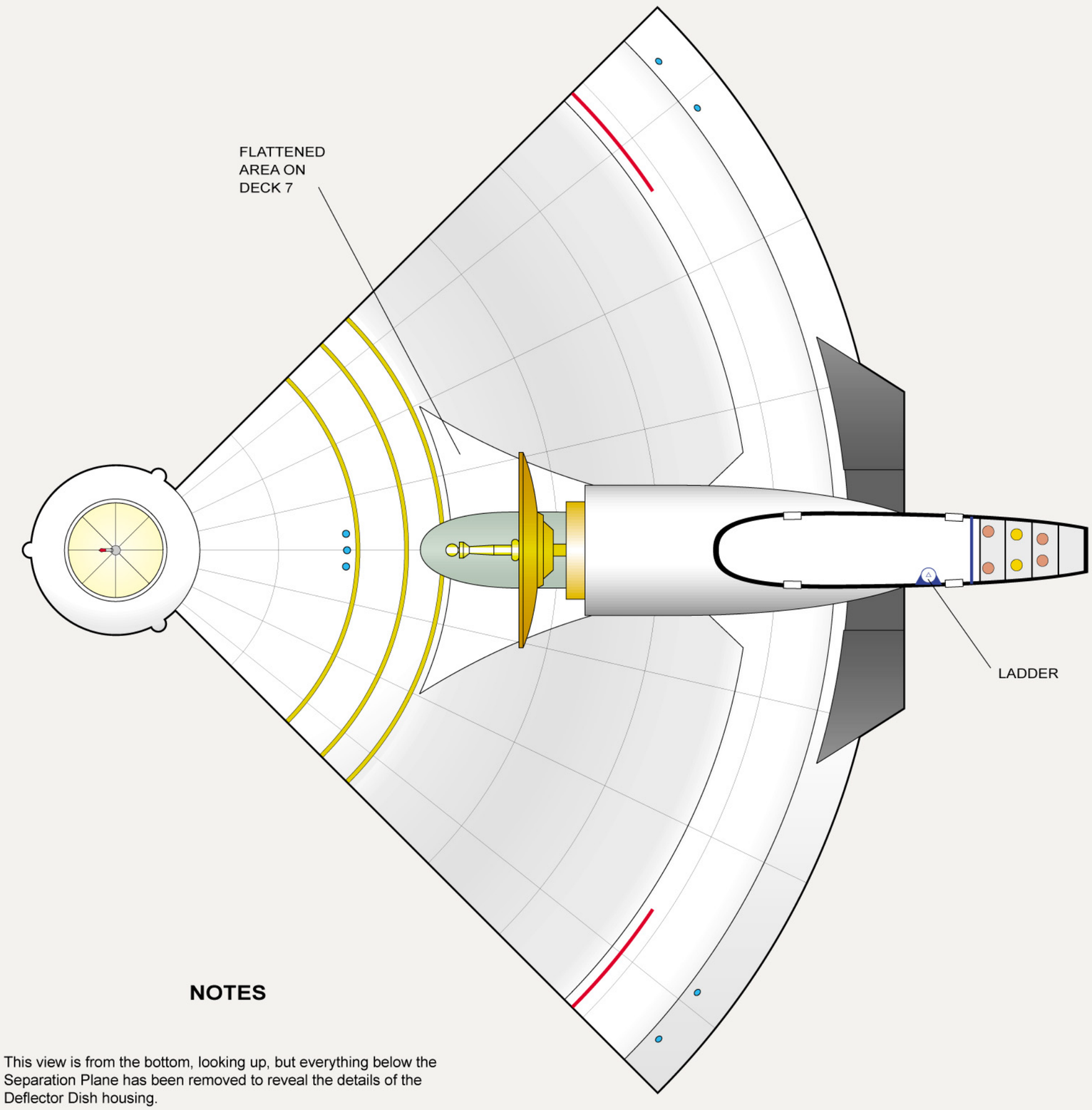
LAYOUT: BOTTOM DETAILS **PAGE 5 of 18**

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SHIP DATA

LENGTH:	241 m
WIDTH:	127 m
HEIGHT:	63 m
TRANSPORTERS	
6-person:	3
22-person:	1
cargo:	2
SHUTTLECRAFT:	4
PHASERS	
banks of 2:	6
TORPEDO TUBES:	2

SHIP'S COMPLEMENT

OFFICERS	20
ENLISTED	175
TOTAL	195

ACCOMMODATIONS

DECK 4 -	Ring A -	4
	Ring B -	13
DECK 5 -	Ring A -	12
	Ring B -	12
	Ring C -	14
DECK 6 -	Ring A -	12
	Ring B -	18
	Ring C -	30
	Ring D -	42
	Ring E -	48
	Ring F -	46
	Ring G -	43
	Ring H -	36
TOTAL:		331

NOTES

This view is from the bottom, looking up, but everything below the Separation Plane has been removed to reveal the details of the Deflector Dish housing.

The Ladder shown is on Ventral Deck 16. This Ladder leads down to Ventral Deck 17 and, from there, a Hatch leads down to the Engine Inspection Station which is embedded in the engine nacelle.

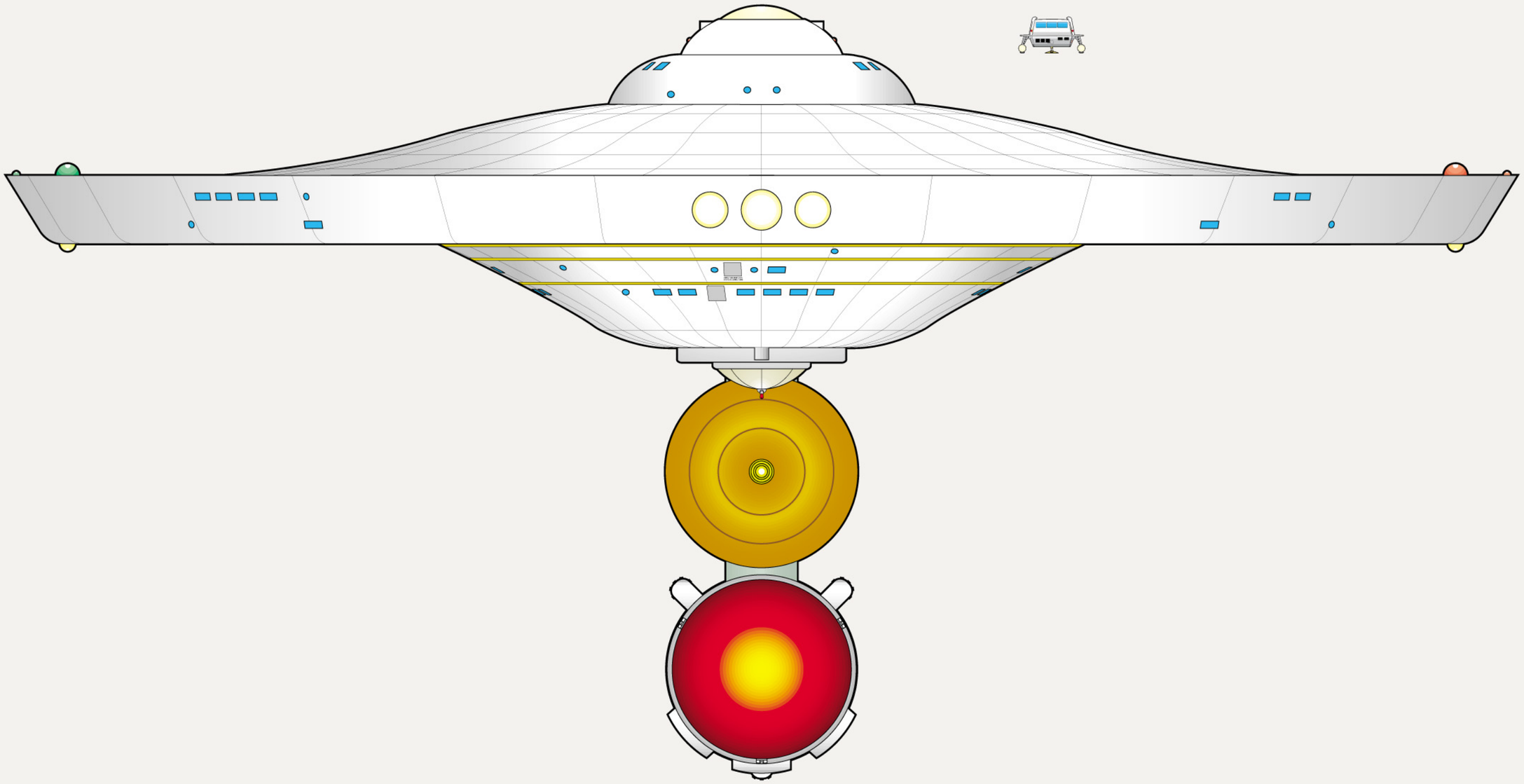
STAR TREK - MASAO-CLASS DESTROYER

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NOTES

DECK 6 (on Page 13)
The layout of this deck is similar to the FJ design for the Constitution-class ship. I like the tri-radial symmetry. As on Deck 5, the turbo-elevator shafts are separated by 120°. I also added 4 more turbo-elevator storage spaces. This network is not as extensive as the FJ design; walking a few hundred feet or meters should not be an issue.

The windows around the edge of the Primary Hull governed the location of the two Recreation Rooms / Lounges. They have balconies (on Deck 6) which overlook the main level (on Deck 7). Stairs lead down from the balconies to each Lounge.
There are stairs at the bow, behind the Deflector Equipment, and also near the Cargo Transporters.

In the center are 3 relaxation areas. The one at the front is a Lounge. The other two are Messrooms because they are serviced by food dispensers which are directly connected to the Food Preparation area

DECK 6 (continued)
on Deck 8.

The Impulse Engines and Main Engineering are at the rear.

Machine shops are to port. Environmental Engineering and turbo-elevator maintenance are to starboard. The Engineering Computers are to port and starboard of Main Engineering.

Tactical & Warfare Countermeasures Equipment (EW) is located at the rear, outboard of the Engineering Computers. Work stations related to this equipment are also located nearby.

About 30 Crew's Quarters were removed to make room for the Highbay of the Shuttlecraft Maintenance Area. There is no direct turbo-elevator shaft heading aft. Instead, the shaft detours around the Highbay.

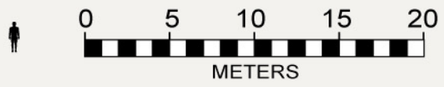
STAR TREK - MASAO-CLASS DESTROYER

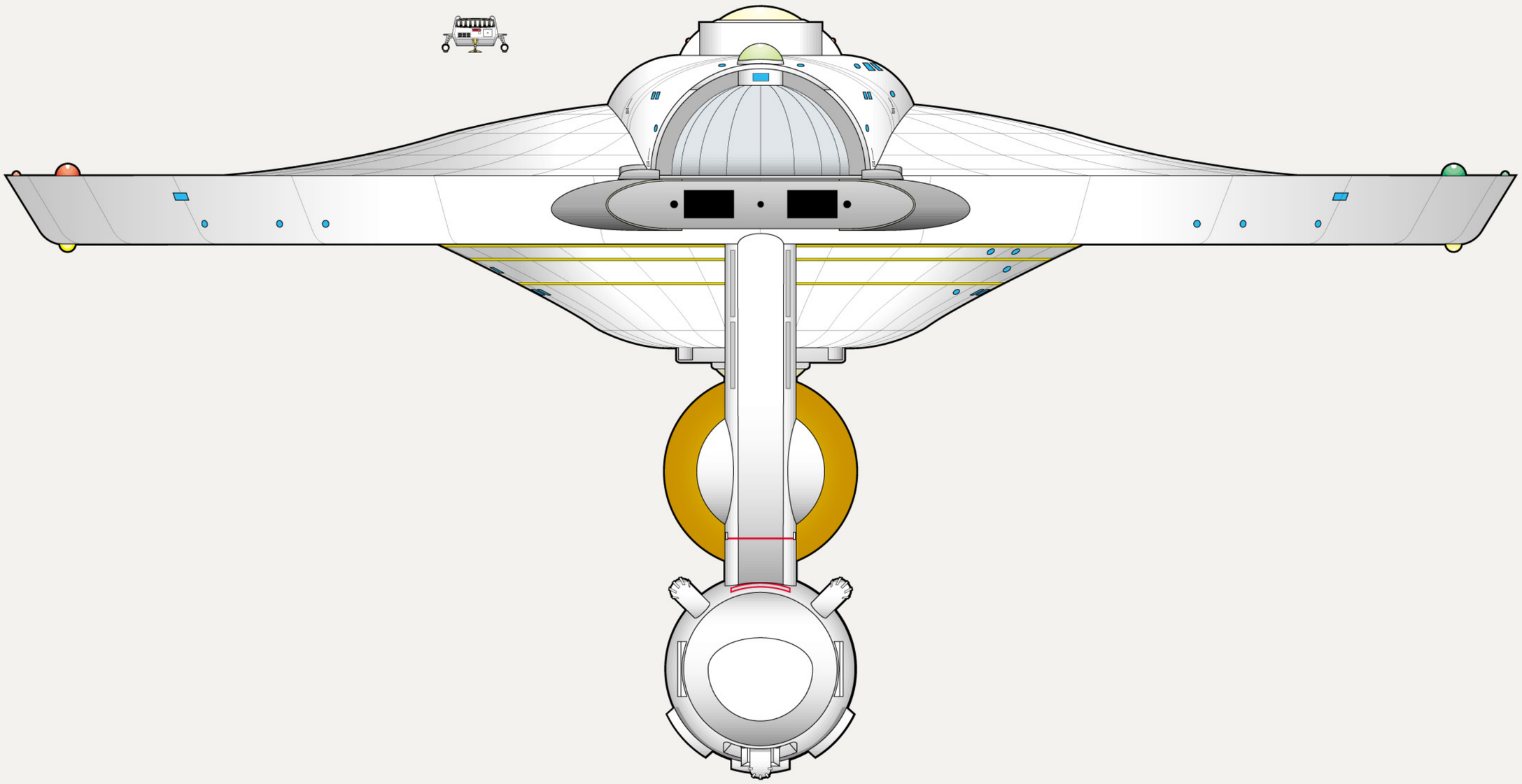
LAYOUT: REAR **PAGE 7 of 18**

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NOTES

DECK 7 (on Page 14)
The windows around the edge of the Primary Hull governed the location of the two Recreation Rooms / Lounges.
They have balconies (on Deck 6) which overlook the main level (on Deck 7). Stairs lead up from each Lounge to the balconies.
There are stairs at the bow, behind the Deflector Equipment, and also near the Cargo Transporters.

The grey area represents the concave cutout on the underside of the Primary Hull. This area could be used to store water, or fuel, or air, or more general cargo. I leave the area grey (for the most part) so as to clearly set it apart from the rest of the deck. The 2 Main Landing Legs found on Constitution-class ships were deleted and a hatch was installed at each location.

The center of this Deck contains the ship's Main Computers. The machinery for the Food Conveyors is located aft of the Main Computers. The ring around the Computers contains Sickbay.

DECK 7 (continued)
Sickbay includes various labs, offices, and a post-surgery recovery area.

The ring around Sickbay contains the Armory, Briefing Room, Chapel, Brig, the Dilithium Energizer Station, a few other offices, and airlocks where the 2 Main Landing Legs used to be. Those were replaced with hatches for extra-vehicular activities. The ring also contains three Transporters (for 6 people) as well as one Emergency Transporter (for 22 people). One Transporter of each type (when compared to Constitution-class ships) was deleted to make room for the Shuttlecraft Maintenance Area.

The flattened area of the undercut was enlarged to allow the Shuttlecraft Turntable and Lift to reach down to the Shuttlecraft Maintenance Area. The Chief Engineer's Office is immediately aft of this. The Shuttlecraft fuel and spare parts are within an area of the hull where the undercut was not flattened.

The outermost ring contains two Cargo Transporters as well as Cargo Holds.

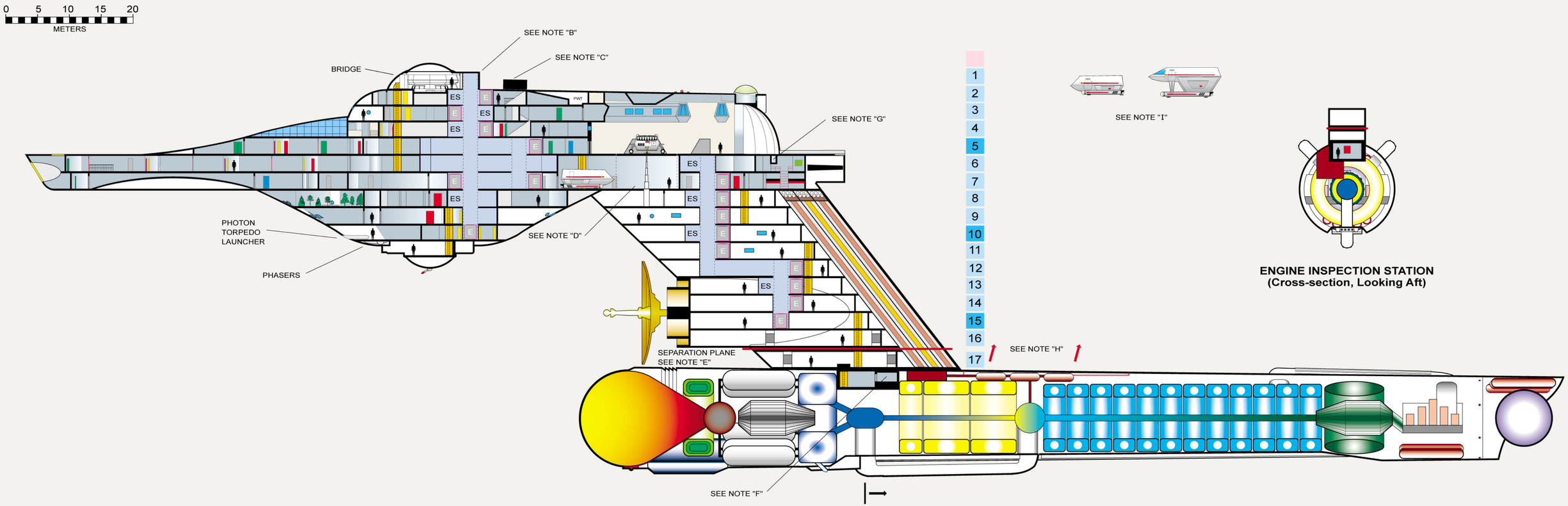
STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: PORT CUTAWAY — PAGE 8 of 18

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ENGINE INSPECTION STATION
(Cross-section, Looking Aft)

ENGINE INSPECTION STATION
(Cross-section, Looking Aft)

NOTES

A SEE PAGE 1

These 3 pale gold-coloured recessed rings are part of the Tractor Beam system. See Page 16 for more information.

B

The height of the bump behind the Bridge has been increased to allow a turbo-elevator to fit. See Page 9 for more information.

C

This is the "Emergency Crew Escape" hatch, to be used after the Primary Hull has detached from the Warp Engine and made an emergency landing.

D

The undercut on the Primary Hull affects Deck 7. However, the connection to the ventral decks allows Deck 7 to be flat at this location. The flat region had to be widened to allow the Shuttlecraft Turntable and Lift to fit. This is shown on Page 4, Page 5, and Page 14 and discussed on Page 7.

E

The location of the "Separation Plane" was determined by the spacing and thickness of the decks.

F

The Matter-Antimatter Reaction Chamber is heavily shielded and recessed within the Warp Engine nacelle.

G

The Hangar Bay Door Machinery is located here. In the center, it encroaches into the Engineering Highbay slightly. To port and starboard, it occupies more space, but does not conflict with normal engineering operations.

H

Antimatter is created / stored in the engine nacelle. In an emergency, the red-outlined panel swings open and the antimatter is ejected up and to the rear.

I

The Shuttlecraft used here measure 28 feet (8.5 meters) in length, as suggested by the size of the interior set. The studio prop was 21 feet (6.4 meters) which was about 3/4 of the intended size. In one episode of STAR TREK, Captain Kirk mentioned the Shuttlecraft is 24 feet (7.3 meters) long.

Special thanks to Dana E. Lubich for permission to display the Cargo Shuttle design which Dana developed 30 years ago.

CUTAWAY SYMBOLS

- STRAIGHT WALL
- CURVED WALL
- CUTAWAY ALONG WALL
- INNER FACE OF HULL
- CUTAWAY THROUGH DECK
- CUTAWAY ACROSS WALL
- CUTAWAY THROUGH DOOR
- TREE, SHRUB
- DOORS
- ISOLATION DOORS
- PRIVACY SCREENS
- RECTANGULAR LADDER ALCOVE
- ROUND LADDER ALCOVE
- STAIRS
- RAILING
- JEFFERIES TUBE

STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: DECK 1 (BRIDGE)

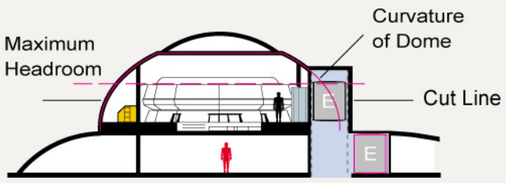
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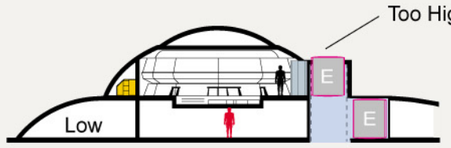


ORIGINAL BRIDGE



"A"

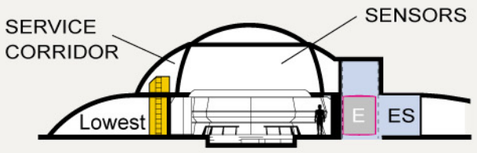
REVISED BRIDGE (3 possibilities)



"C"



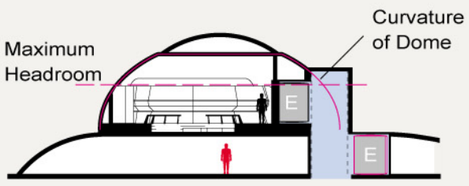
"D"

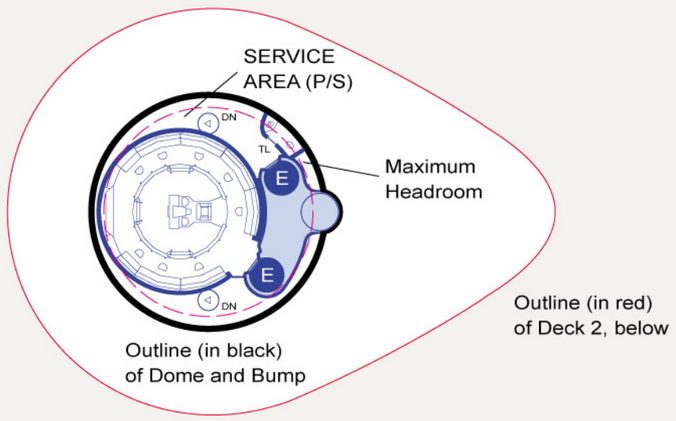


"E"

NOTES

ORIGINAL BRIDGE
The Bridge of the U.S.S. ENTERPRISE was intended to be under the dome on the studio model, as per the special effect in the first scene of THE CAGE. The original dome was taller. The bump aft of the dome

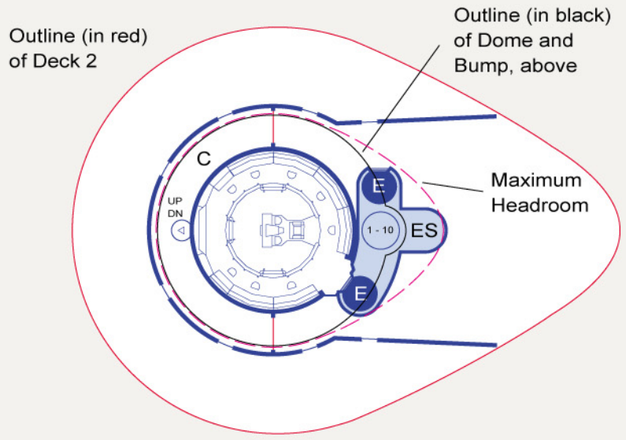




DECK 1: ORIGINAL BRIDGE ("B")

ORIGINAL BRIDGE (continued)
was also taller. A turbo-elevator car easily fits inside the bump even if the recessed floor of the Bridge is above the ceiling of Deck 2 (see "A"). However, the curvature of the dome does not allow a lateral turbo-elevator tube to fit behind the Bridge; the car has to remain inside the bump. Therefore, the Bridge has to be rotated 36° counter-clockwise.

A forward-facing Bridge CAN fit (see "B") but it has to be shifted toward the front. It is the only way a turbo-elevator car can fit under the curvature of the dome. This shift allows a lateral turbo-elevator tube and even a spare turbo-elevator car to fit behind the Bridge.



DECK 1: REVISED BRIDGE ("E")

REVISED BRIDGE (Low)
When the shape of the Bridge on the model was modified, material was removed from the bottom of the dome and the bump. The lower curvature of the dome's ceiling means the Bridge cannot be shifted forward. Placing it back in the middle means there is no space for a lateral turbo-elevator tube behind the Bridge, so the Bridge has to be rotated 36° to ensure the turbo-elevator car remains inside the bump. However, the material that was removed reduced the height of the bump too much. A turbo-elevator car no longer fit even if the recessed floor of the Bridge is dropped below the ceiling of Deck 2 (see "C").

REVISED BRIDGE (Lower)
If the main floor of the Bridge is also dropped below the ceiling of Deck 2, the turbo-elevator car does finally fit inside the bump. But, this makes the ceiling for most of Deck 2 too low. The Bridge is still rotated 36° but now the turbo-elevator car waiting inside the bump (to serve the Bridge) is too low, obstructing the shaft and preventing service to Deck 2 (see "D").

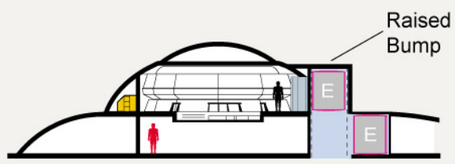
REVISED BRIDGE (Lowest)
If the Bridge is lowered all the way to Deck 2 a lateral turbo-elevator tube and even a spare turbo-elevator car fits (see "E"). But what of the dome? It could contain sensors and a service corridor . . . and now the Bridge is not as vulnerable, so all this might be a good thing.

In at least one episode, a character left the Bridge and a moment later a turbo-elevator car was available for another character to leave. Spare turbo-elevator cars must be stored somewhere close, very close.

The Bridge shown in "E" is used only in the U.S.S. ENTERPRISE Heavy Cruiser plans.

ALTERNATE BRIDGE CONFIGURATIONS
A simpler, more practical solution is to raise the bump slightly (see "F"). This is a good start. Extending the bump to the port side, or to both sides, is even better. Now a lateral turbo-elevator tube fits behind the Bridge.

The "Auxiliary Door" is optional, added here to satisfy what we see in the Animated Series. Think of it as being hidden behind the display panel to port of the main viewing screen.



MODIFIED BUMP ("F")

Such changes allow for smoother turbo-elevator operations, turbo-elevator storage spaces closer to the Bridge, and other (better, more logical) Bridge configurations. To the right are three such designs.
One of these is used in each of my starship blueprint sets.

v1.
A storage space for spare turbo-elevators exists to starboard. The bump is much bigger but is symmetrical.

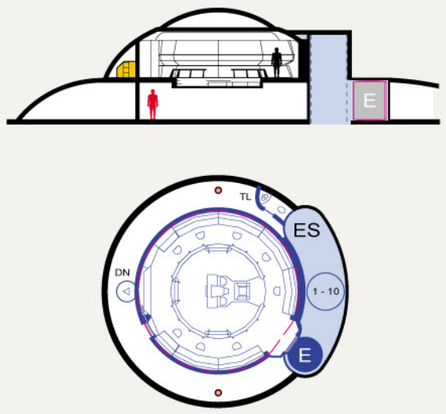
v2.
This second design minimizes the change to the size and shape of the bump but it is now asymmetrical.

v3.
The turbo-elevator storage space has been replaced by a second access

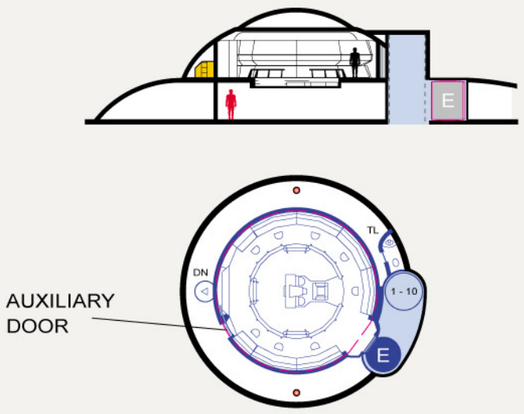
v3. (continued)
point for the Bridge. The stations have been re-arranged around the Bridge, but overall, one station has to be deleted.

In all these Bridge designs, access to the Service Corridor is via removable panels, or the auxiliary door, or the ladder.

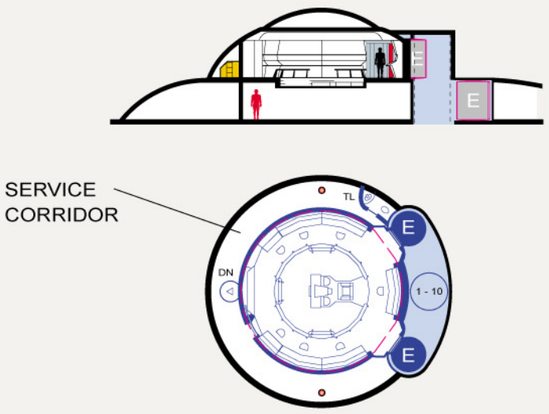
In all these alternate versions, the Bridge faces forward ... as it was always meant to be (in my humble opinion).



DECK 1: BRIDGE (v1)



DECK 1: BRIDGE (v2)



DECK 1: BRIDGE (v3)

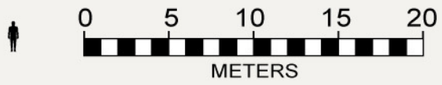
STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: DECKS 2 and 3 **PAGE 10 of 18**

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NOTES

DECK 2
Even after adjusting the spacing of the top 4 decks, the recess in the center of the Bridge still affects the ceiling of Deck 2. The ceiling in the center of Deck 2 is so low that it can only be used for storage. That area is labeled EL (Environmental Lockers) and contains full spacesuits, partial suits, air-testing kits, etc ... useful if exiting via the hatch.

In at least one episode, a character left the Bridge and a second later a turbo-elevator was available for another character to leave the Bridge. Spare turbo-elevators must be stored somewhere nearby, so one such storage spot is on Deck 2.

A Briefing Room and the Captain's Ready Room help support whatever military duties are assigned.

Stairs allow many people to exit the ship quickly. I can't imagine people trying to exit a ship (especially in an emergency situation) by using ladders. We never saw stairs but that does not mean stairs do not exist. The location of the hatch for these stairs coincides with an external marking on the studio model of the U.S.S ENTERPRISE.

Aft of the stairs is the Piping / Wiring Trunk.

The Landing Tractor Beam can be reached from the Hangar Bay, The Hangar Bay Control Dome is normally unmanned. It can also be reached from the Hangar Bay. The Hangar Bay cannot be accessed directly from the forward part of Deck 2.

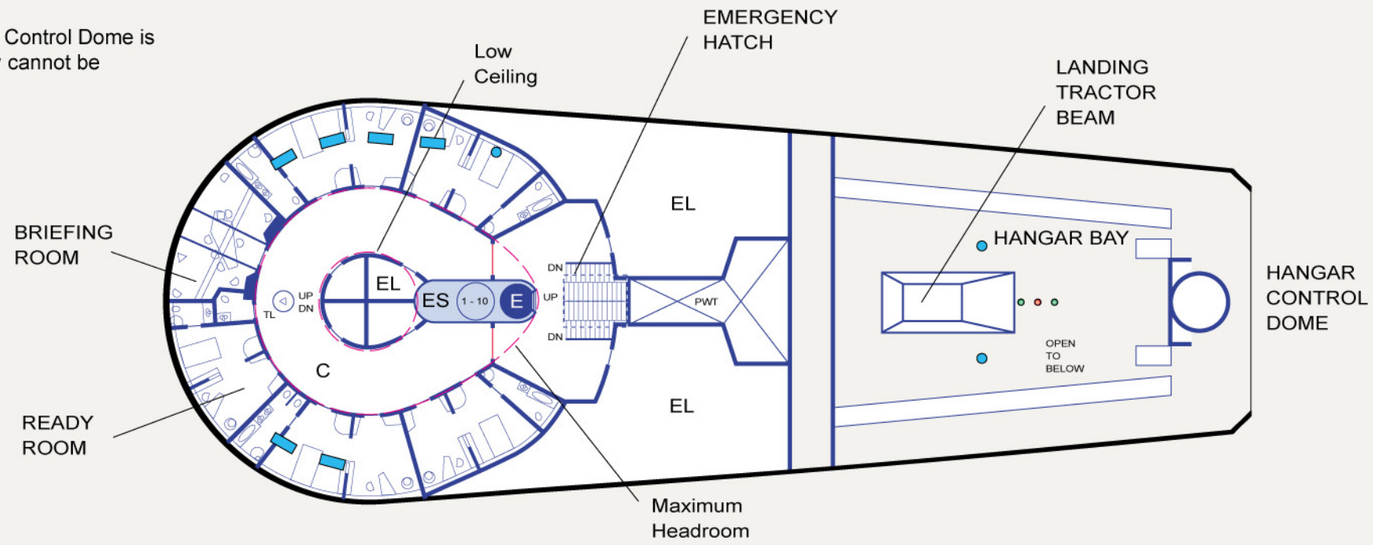
DECK 3
Stairs for the emergency exit on Deck 2 start on Deck 4 and continue up from there past this level. On either side are storage spaces (labeled EL) containing full spacesuits, partial suits, air-testing kits, etc ... useful if exiting via the hatch on Deck 2.

An Officers' Lounge occupies the forward part of this deck.

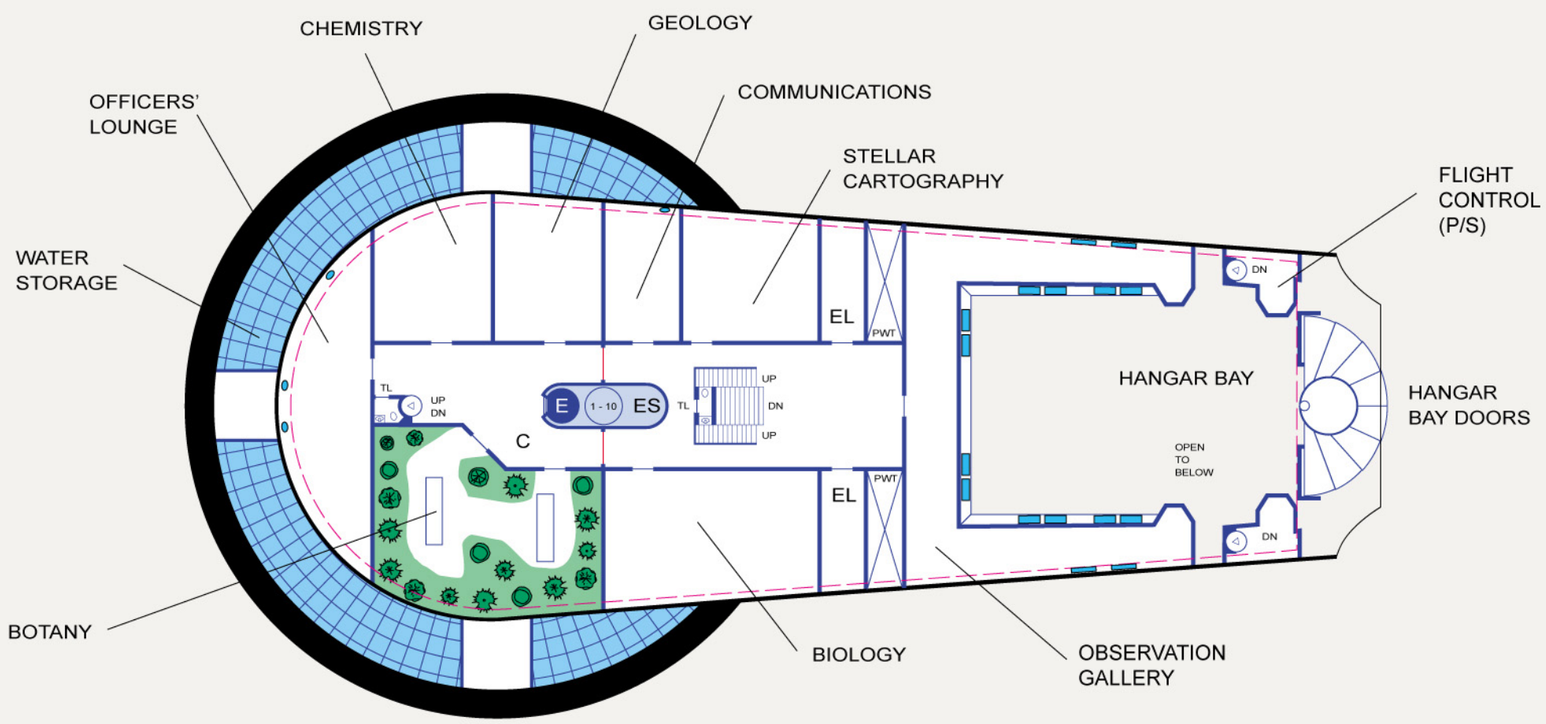
Some Science Labs will exist regardless of the exact role or class of the ship. They could be reconfigured depending on the mission requirements.

Water storage surrounds this deck.

The Observation Gallery overlooks the Hangar Bay at the aft end. The Flight Control Booths are accessed by ladder from below.



DECK 2: BRIEFING ROOM / READY ROOM



DECK 3: SCIENCE LABORATORIES / LOUNGE

STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: DECK 4 **PAGE 11 of 18**

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NOTES

DECK 4
The stairs for evacuating the crew after an emergency landing via the hatch on Deck 2 start on this deck. To starboard and aft of these stairs is a storage space (EL).

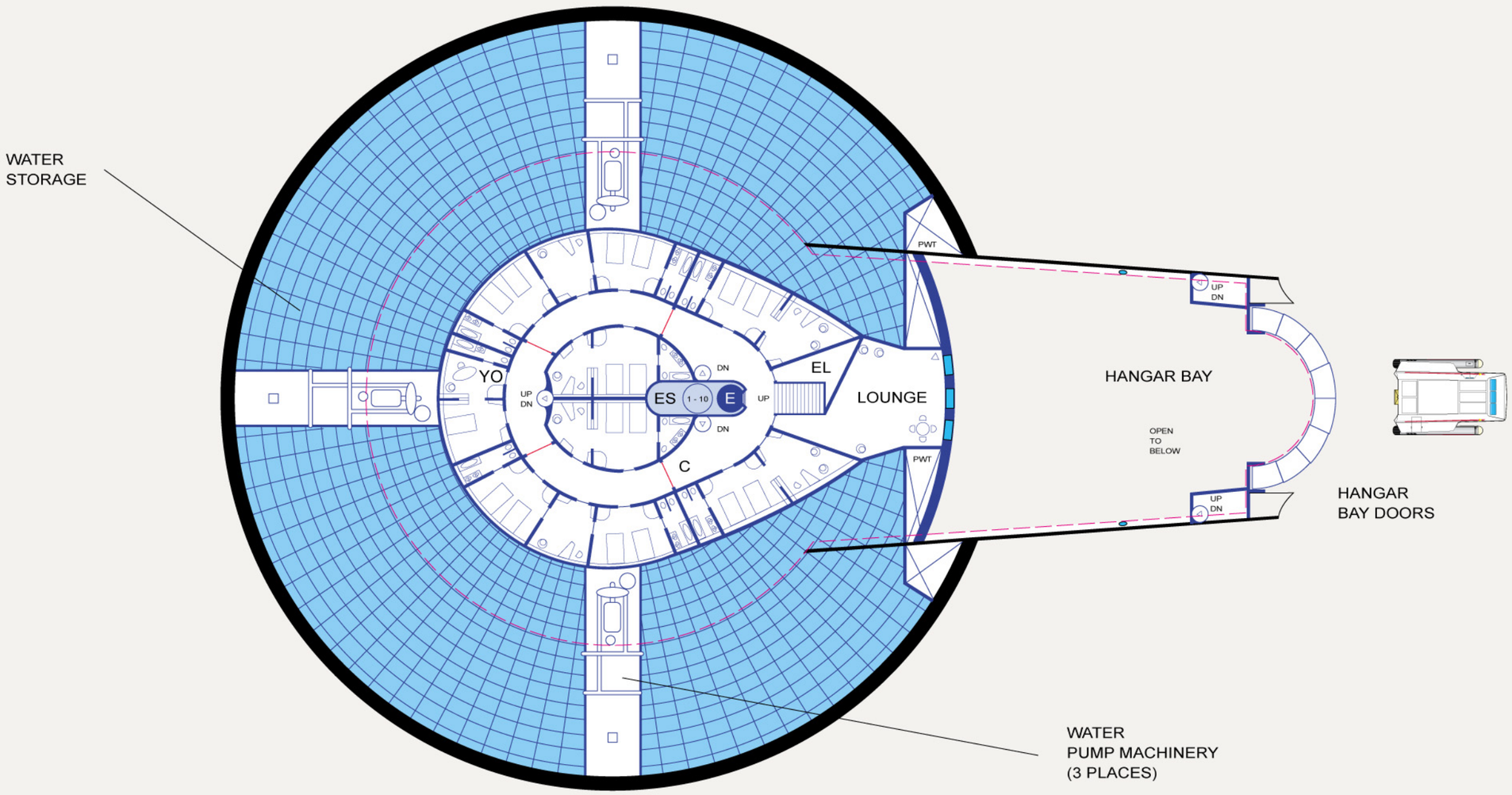
TMoST mentions that Water Storage is on Deck 7. Of course, water can be placed there too, but the shallow space around this deck lends itself well to this function.

Most of the Crew's Quarters in the Primary Hull are laid out in rings. The rings are labeled from the center outwards, starting with A, then B, then C, and so on.

DECK 4 (continued)
There is a small lounge aft of the stairs with a view into the Hangar Bay.

The Piping / Wiring Trunk split on the deck above. Those two trunks continue on each side of the Hangar Bay.

TMoST mentions Junior Officers have quarters on Deck 4. There are sufficient accommodations in the Primary Hull for the crew complement of this type of ship. Crew members do not have to share quarters with anyone else.



DECK 4: JUNIOR OFFICERS' QUARTERS

In JOURNEY TO BABEL, over 100 diplomats were transported by the U.S.S. ENTERPRISE.
In THIS SIDE OF PARADISE, over 150 colonists were transported off-planet by the ship.

Gene Roddenberry imagined a higher standard of living for everyone, even enlisted crew members. There are more than enough rooms and beds on the ship to accommodate diplomats, colonists, etc. It would only be in such situations that crew members might be asked to share quarters.

STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: DECK 5 **PAGE 12 of 18**

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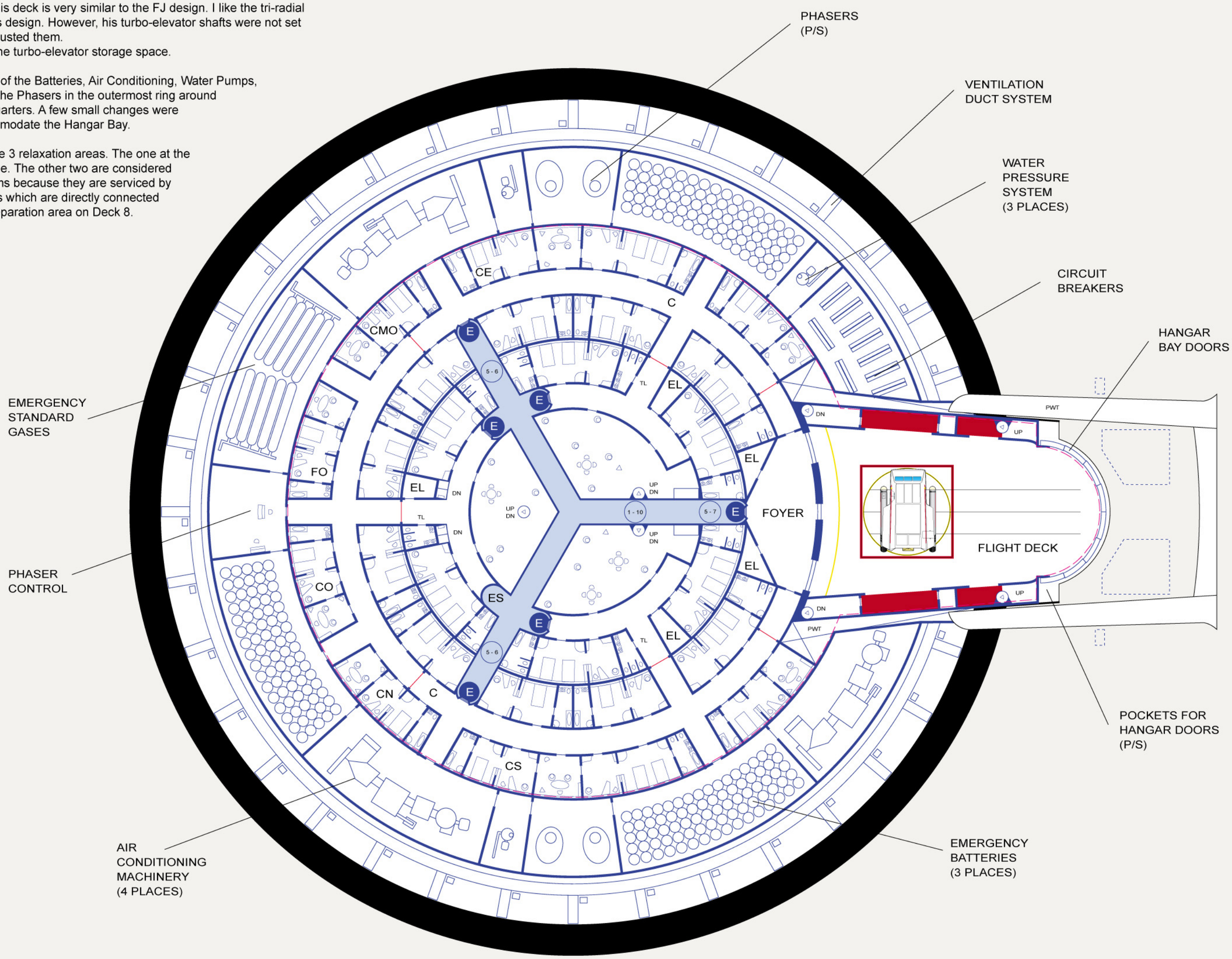
0 5 10 15 20
METERS

NOTES

DECK 5
The layout of this deck is very similar to the FJ design. I like the tri-radial symmetry of his design. However, his turbo-elevator shafts were not set at 120° so I adjusted them.
There is also one turbo-elevator storage space.

I retained most of the Batteries, Air Conditioning, Water Pumps, etc. as well as the Phasers in the outermost ring around the Officers' Quarters. A few small changes were made to accommodate the Hangar Bay.

In the center are 3 relaxation areas. The one at the front is a Lounge. The other two are considered to be Messrooms because they are serviced by food dispensers which are directly connected to the Food Preparation area on Deck 8.



DECK 5: SENIOR OFFICERS' QUARTERS

DECK 5 (continued)
Environmental Lockers (EL) are distributed all around the deck. They can also be used as storage spaces.

The two Piping / Wiring Trunks continue on each side of the Hangar Bay and extend to the rear. They rejoin at the extreme aft end, across the top of the Impulse Engines.

STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: DECK 6 **PAGE 13 of 18**

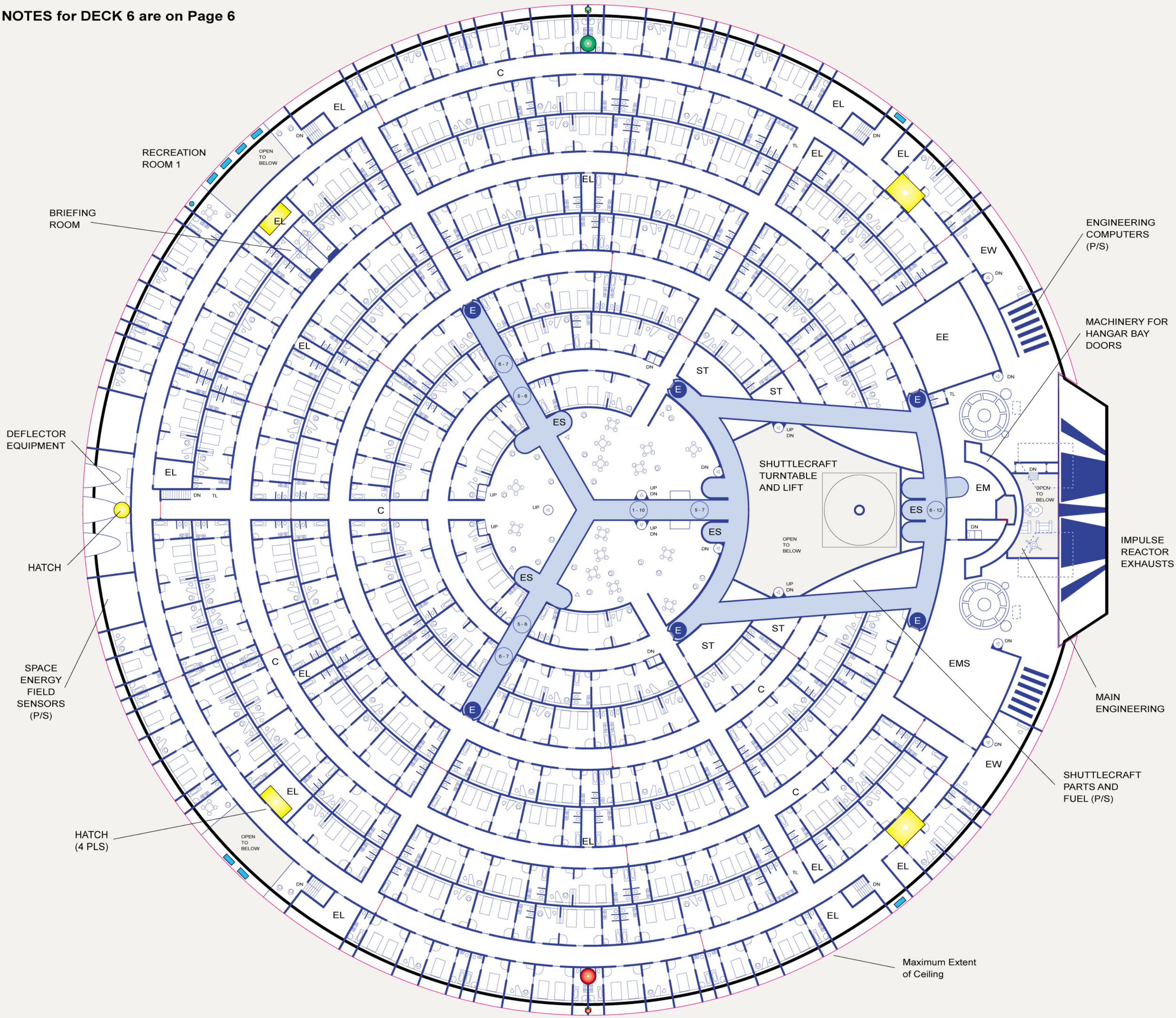
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0 5 10 15 20
METERS

NOTES for DECK 6 are on Page 6



DECK 6: CREW'S QUARTERS / ENGINEERING

STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: DECK 7 **PAGE 14 of 18**

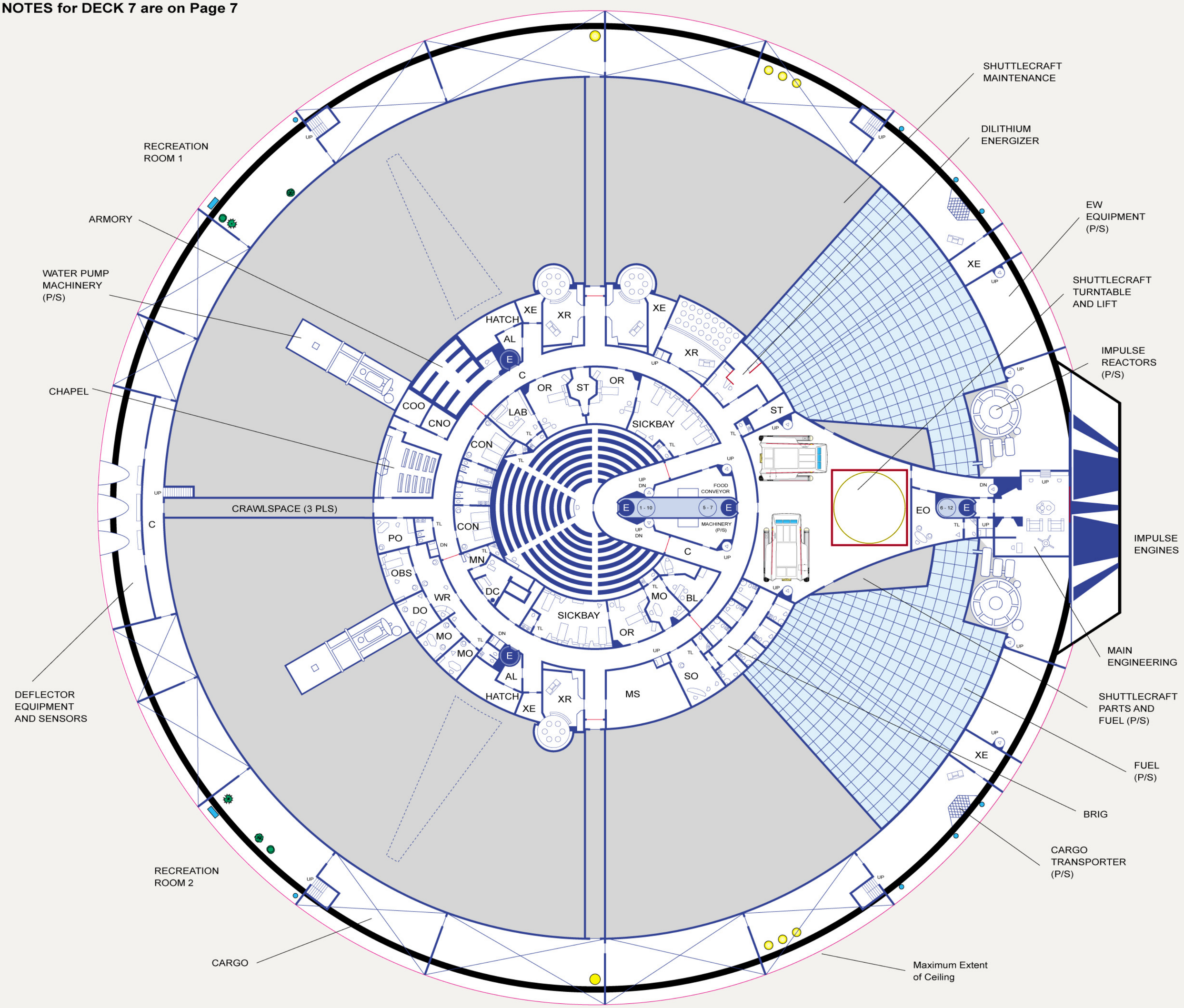
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0 5 10 15 20
METERS

NOTES for DECK 7 are on Page 7



DECK 7: SICKBAY / ENGINEERING

STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: DECKS 8 and 9

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0 5 10 15 20
METERS

NOTES

DECK 8
Most of this deck is unchanged from the configuration of the Constitution-class ship. Laundry, Food Preparation, Main Recreation and Entertainment areas are here.

The Auxiliary Control is surrounded by the ship's Main Computers which continue here from the center of Deck 7.

The Water Storage found here is an extension of the Water Storage on Deck 7.

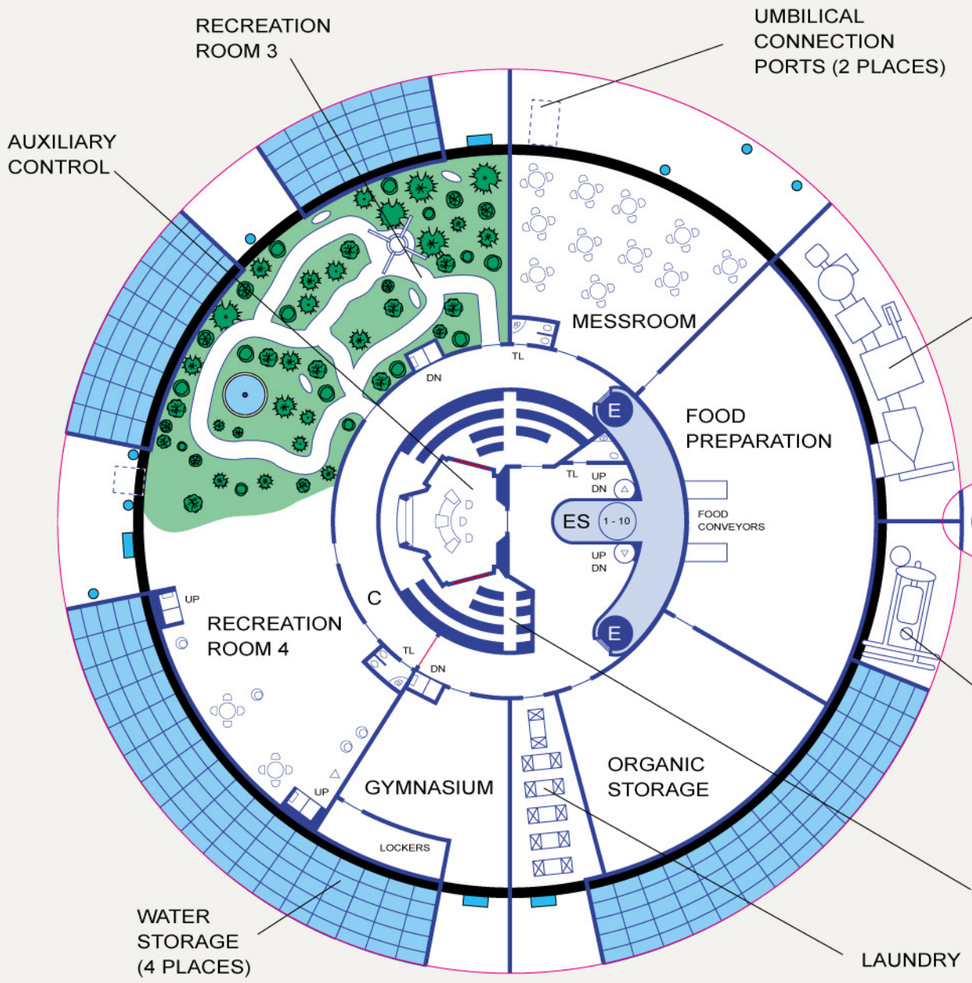
The Food Preparation area has two "conveyors" which distribute food upwards into the Messrooms located on Deck 6 and Deck 5.

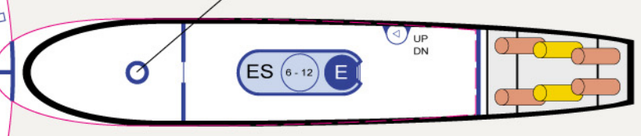
There are four hatches or ports on the studio model. Two of them are on Deck 8. The other two are on Deck 9. Images of these hatches are below, left. Their distribution on the studio model is asymmetric, as are the windows around them. The hull is at such an extreme angle that even the longest hatch results in an opening only 4 feet (1.2 meters) tall. A crew member in a spacesuit can not fit through any of these hatches. Instead, these 2 hatches probably have a function similar to the Umbilical Connection Panels as on the Space Shuttle (below, right).

DECK 8 VENTRAL
The Shuttlecraft and Turntable Lift equipment is located at the front of this deck.

DECK 9
Most of this deck is unchanged from the original configuration of the Constitution-class ship. Material Reclamation and Fabrication is probably not a 100% efficient process. Therefore, these 2 hatches could allow for transfer of rare elements required in various manufacturing processes.

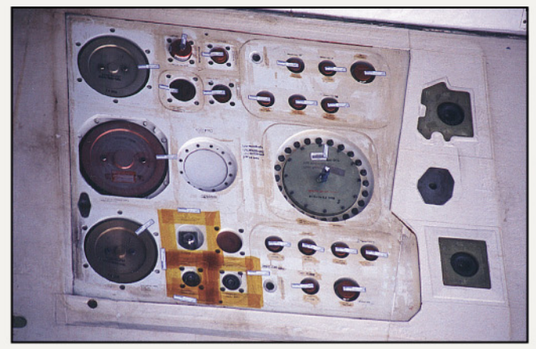
DECK 9 VENTRAL
This is a lounge.

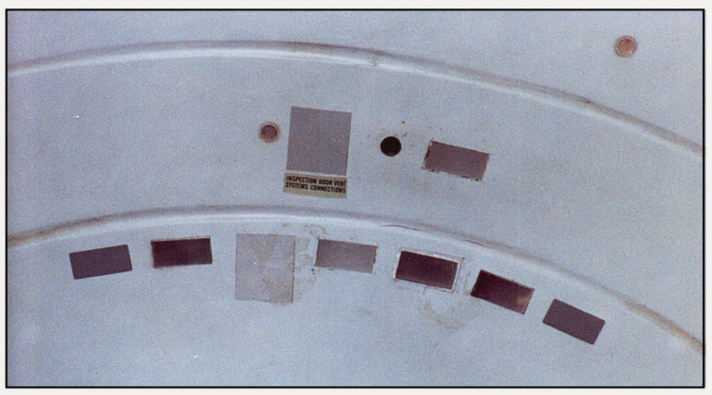


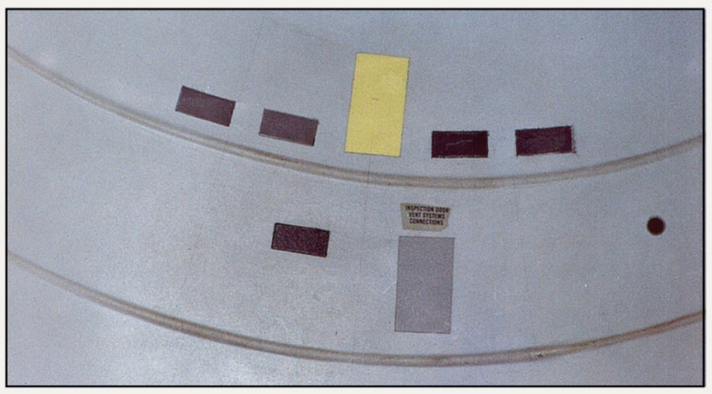


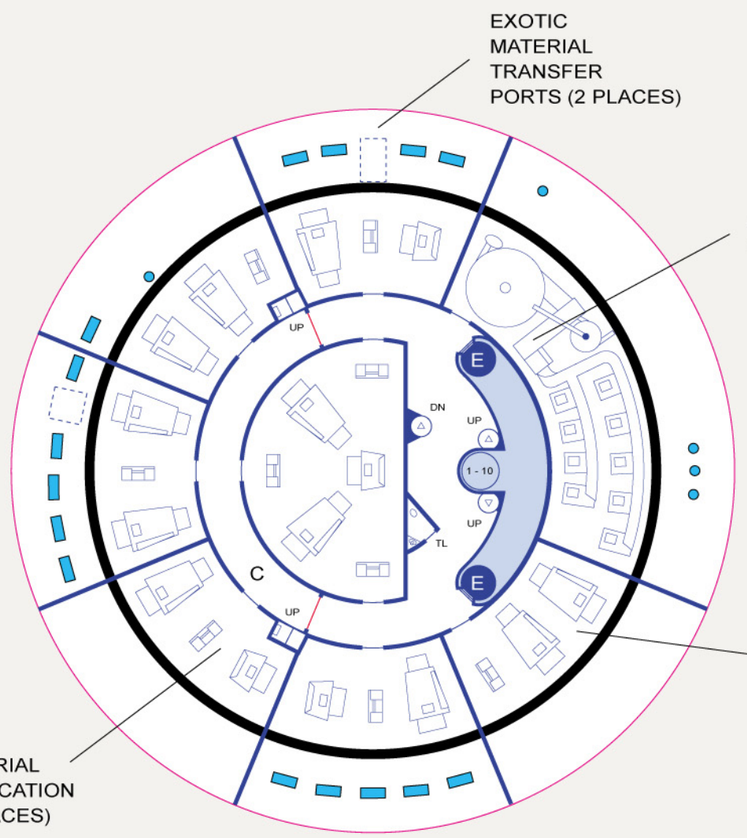
DECK 8: VENTRAL

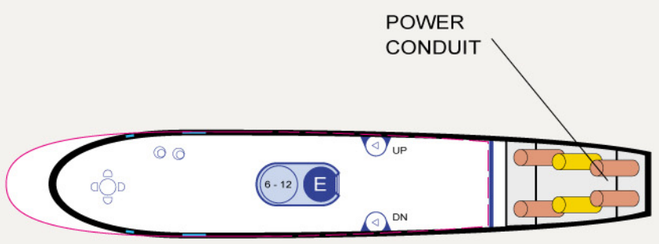
DECK 8: ENTERTAINMENT / RECREATION FACILITIES





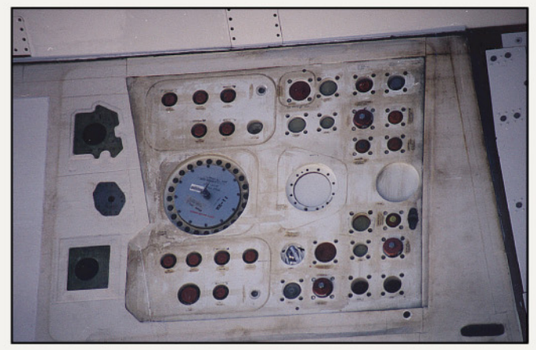






DECK 9: VENTRAL

DECK 9: FABRICATION FACILITIES



STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: DECKS 10, 11, and 12 PAGE 16 of 18

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NOTES

DECK 10
TMoST mentions Photon Torpedoes but not their location. Photon Torpedoes were shown in various episodes of STAR TREK to emanate from the underside of the Primary Hull, approximately the same place as the Phasers. Since TMoST states Phaser Banks are on Deck 11, the logical spot for Photon Torpedoes and their launch system is on Deck 10. The rest of the deck is filled with Cargo Holds.

DECK 10 VENTRAL
This is a lounge.

DECK 11
Phasers are located on this deck.

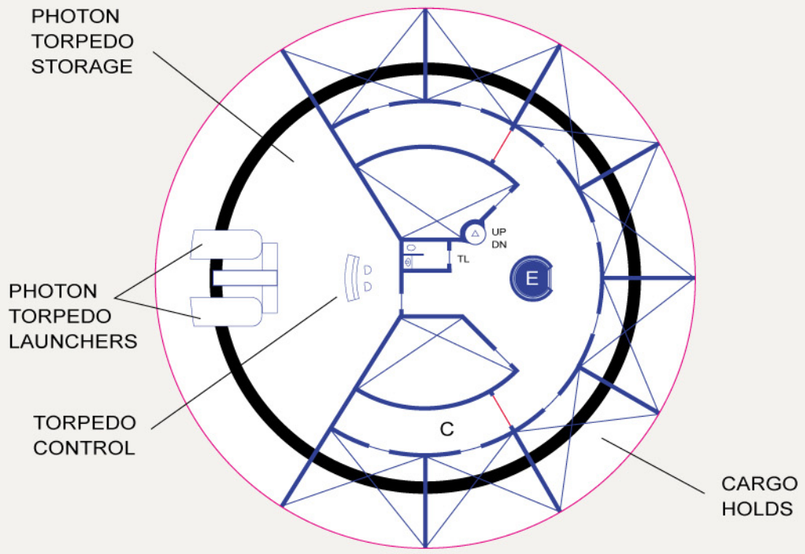
The equipment around the perimeter here on Deck 11 is for the Tractor Beam. The 3 Tractor Beam Controllers direct the Emitter so that the beam can locate and lock onto the object being towed.

The 3 pale gold-coloured recessed rings on the underside of the Primary Hull absorb and re-direct any back-scatter created by the Tractor Beam.

DECK 11 VENTRAL
This is a lounge.

DECK 12
The Lower Sensor Dome is located here.
The Tractor Beam Emitter is at the bottom of the Lower Sensor Dome.

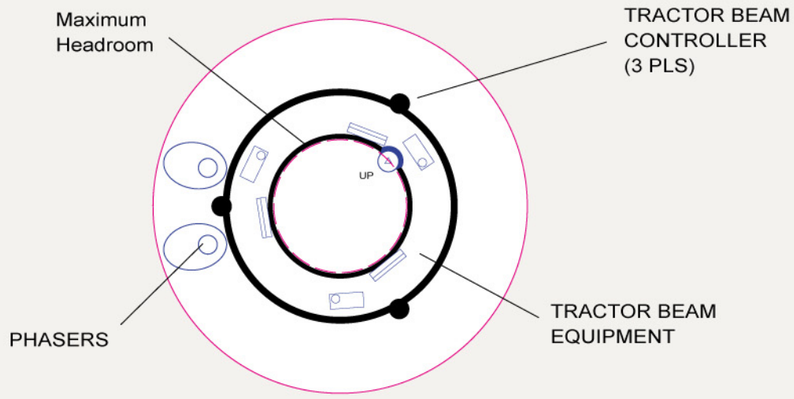
DECK 12 VENTRAL
The horizontal shaft of the turbo-elevator provides access to the lower ventral decks. Most of those levels contain Deflector Equipment.



DECK 10: PHOTON TORPEDO LAUNCHERS / CARGO



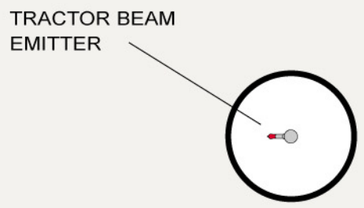
DECK 10: VENTRAL



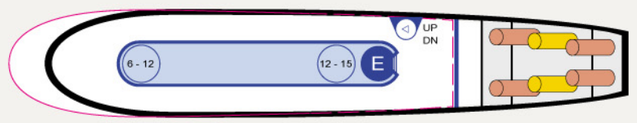
DECK 11: TRACTOR BEAM



DECK 11: VENTRAL



DECK 12: SENSORS / TRACTOR BEAM



DECK 12: VENTRAL

STAR TREK - MASAO-CLASS DESTROYER

LAYOUT: VENTRAL DECKS

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NOTES

DECK 13 VENTRAL
Deflector Equipment is located on this deck.

DECK 14 VENTRAL
More Deflector Equipment is located on this deck.

DECK 15 VENTRAL
More Deflector Equipment is located on this deck.

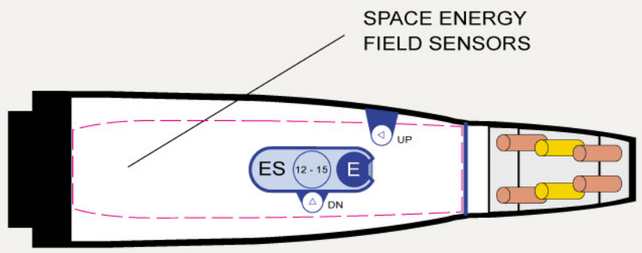
DECK 16 VENTRAL
Engineering Monitoring Stations are located here.
The hatch for accessing the Matter-Antimatter Reaction Chamber is located here.

DECK 16 VENTRAL (continued)
This hatch is usually closed and is heavily shielded.

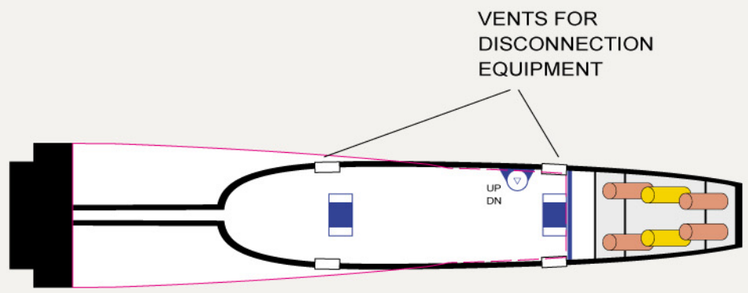
The disconnection equipment is located here. This area is kept clear and is difficult to enter except by authorized personnel. It is accessible only by ladder.

DECK 17 VENTRAL
The disconnection equipment is located here. This area is kept clear and is difficult to enter except by authorized personnel. It is accessible only by ladder.

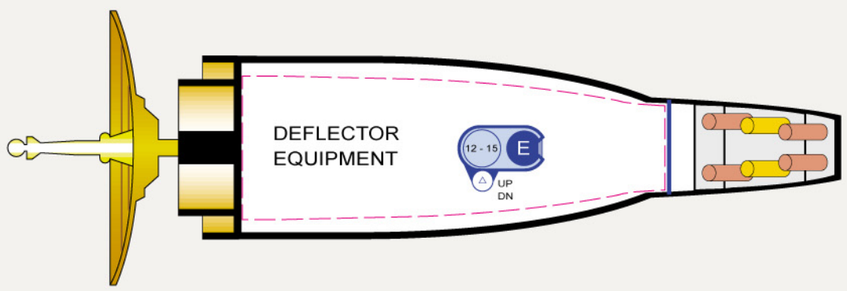
ENGINE INSPECTION STATION
The Matter-Antimatter Reaction Chamber is located here. The access hatch on Deck 16 is usually closed. This entire level is heavily shielded.



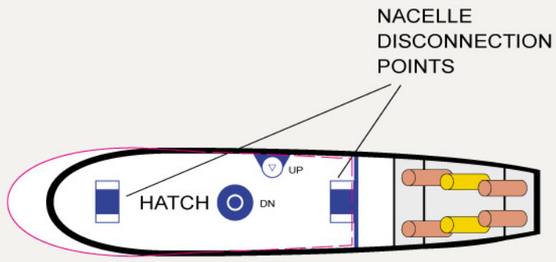
DECK 13: VENTRAL



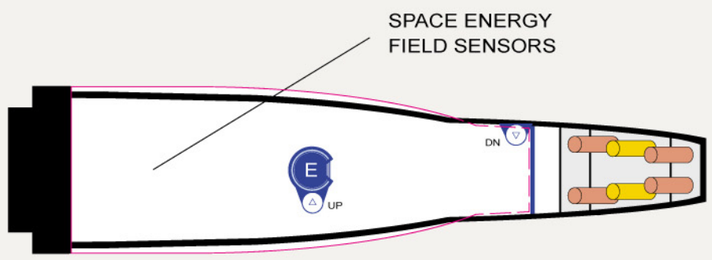
DECK 16: VENTRAL



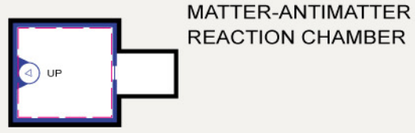
DECK 14: VENTRAL



DECK 17: VENTRAL



DECK 15: VENTRAL



ENGINE INSPECTION STATION

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GENERAL NOTES

When Matt Jefferies designed the U.S.S. ENTERPRISE, he wanted a smooth hull. He reasoned that if anything needed to be accessed, it would be done so from inside the ship. But if red rectangles and yellow circles exist on the hull, they must be there for emergency situations, quick identification, or some aspect of ship's operations.

Matt Jefferies understood that incredible energies would be required to propel a ship faster than light. If this is accomplished with antimatter, why store it in the habitable section of the ship? He and Gene Roddenberry both loved airplanes; they understood and agreed on the importance of isolating dangerous components, yet still making them accessible if required. Yes, Dilithium Crystals are stored in or near Engineering and help modify / channel the energy, but why does the antimatter need to be stored in or near Engineering?

The idea of a Bussard Ramjet was developed in 1960. This label was applied to the U.S.S. ENTERPRISE engines retroactively, after the series ended. A Bussard Ramjet compresses matter for fusion. The grey area on the engine nacelle could indicate where that matter is stored. But on the U.S.S. ENTERPRISE the matter is then mixed with antimatter. Therefore, the red rectangle on the engine nacelle could indicate where the antimatter is stored.

The red rectangle on the engine nacelle could be an access hatch, or an "Emergency Jettison" hatch. Dialogue in various episodes of STAR TREK corroborates the idea of disengaging, discarding, or jettisoning the warp engine nacelles. Dialogue also mentions ejecting the antimatter pod.

The idea of a "Warp Core" came along much later, when the ENTERPRISE was refit for the movies. Will Decker told Kirk, "This is an almost totally new ENTERPRISE." The idea of "ejecting a Warp Core" was introduced in STAR TREK THE NEXT GENERATION. These drawings make no attempt to "retcon" such concepts.

The huge pipes / conduits (visible through the grille behind Engineering) was a set built with forced perspective to suggest immense size and power. The angle on the conduits suggests they continue up the pylons of the U.S.S. ENTERPRISE.

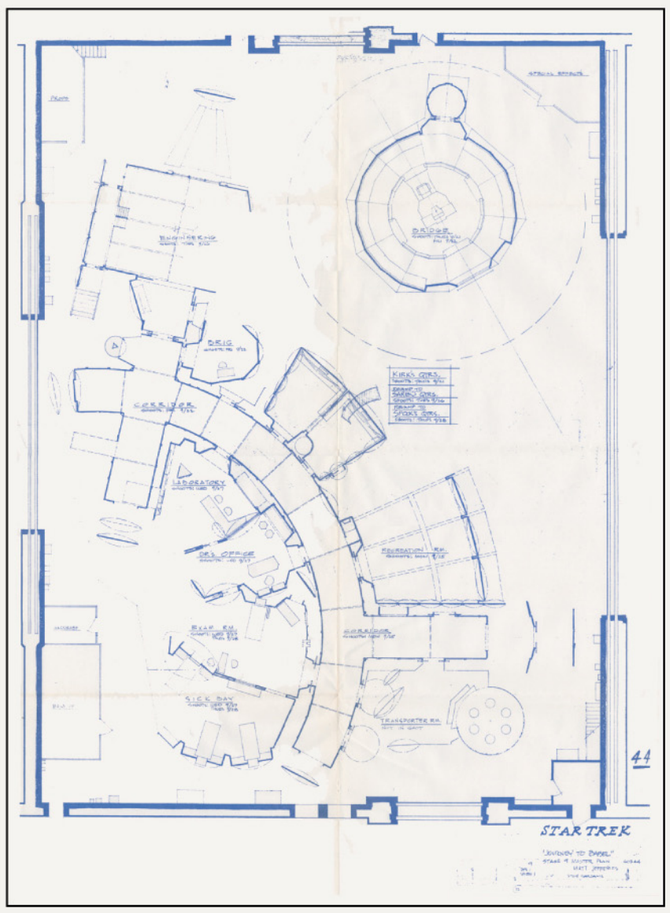
Regarding the antimatter:
CASE 1. Collect matter in the engine nacelle, send the matter to Engineering, mix it (in the habitable section of the ship) with antimatter (stored in the habitable section of the ship!), pass the energy through the Dilithium Crystals, then send the energy up to the engine nacelles to create the warp field.
CASE 2. Collect matter in the engine nacelles, mix it (in the engine nacelles) with antimatter (stored in the engine nacelles), send the energy to Engineering, pass the energy through the Dilithium Crystals, then send the energy up to the engine nacelles to create the warp field.

In both cases, energy is being transmitted. There is no need to move the fuel too (as in Case 1).
Case 1 is unnecessarily complicated.
Case 2 is simpler, and as a bonus, the antimatter is kept away from the habitable section of the ship.

ABBREVIATIONS

AL	-	AIRLOCK
BL	-	BIO LAB
C	-	CORRIDOR
CE	-	CHIEF ENGINEER
CMO	-	CHIEF MEDICAL OFFICER
CN	-	CHIEF NURSE
CNO	-	CHIEF NAVIGATOR'S OFFICE
CO	-	COMMANDING OFFICER
COO	-	COMMUNICATIONS OFFICER'S OFFICE
CON	-	CONVALESCENT WARD
CS	-	CHIEF OF SECURITY
DC	-	DECOMPRESSION CHAMBER
DN	-	DOWN
DO	-	DENTIST'S OFFICE
E	-	TURBO-ELEVATOR CAR
EE	-	ENVIRONMENTAL ENGINEERING
EL	-	ENVIRONMENTAL SUIT LOCKER
EM	-	TURBO-ELEVATOR MAINTENANCE
EMS	-	ENGINEERING MACHINE SHOPS
EO	-	CHIEF ENGINEER'S OFFICE
ES	-	ELEVATOR STANDBY / STORAGE
FO	-	FIRST OFFICER
IC	-	INSPECTION CORRIDOR
LAB	-	LABORATORY
LL	-	LANDING LEG
LLM	-	LANDING LEG MACHINERY
MN	-	DUTY NURSE
MO	-	DOCTOR'S OFFICE
MS	-	MEDICAL SUPPLIES
OBS	-	OBSTETRICS
OR	-	OPERATING ROOM
P	-	PORT (LEFT)
PLS	-	PLACES
PO	-	PSYCHIATRIST'S OFFICE
PWT	-	PIPING / WIRING TRUNK
S	-	STARBOARD (RIGHT)
SO	-	SECURITY OFFICE
SCO	-	SECURITY CHIEF'S OFFICE
ST	-	STORAGE
TL	-	TOILET
WR	-	WAITING ROOM
XE	-	TRANSPORTER EQUIPMENT
XR	-	TRANSPORTER ROOM

THE DESILU STAGE AT THE SAME SCALE



PLAN SYMBOLS

CHAIRS

TABLES

DINING TABLE

SHOWER, TUB

DRESSERS

BED

ROOM PARTITIONS
- White circular grille
- Red hexagonal grille

TOILET, SINK

LADDERS

STAIRS, RAILING

WALL and DOOR

AIR CONDITIONING EQUIPMENT

BATTERIES

MEDICAL DIAGNOSTIC BED

CONTROL CONSOLES

ISOLATION DOOR

CIRCUIT BREAKERS

COMPUTERS

WATER PRESSURE SYSTEM

LAUNDRY UNIT

WATER PUMP MACHINERY

HULL THICKNESS AT FLOOR LEVEL (Varies depending on hull curvature)

TREE, SHRUB

FOUNTAIN

SANITARY WASTE RECOVERY SYSTEM

MATERIAL FABRICATION / RECLAMATION MACHINERY

STANDARD GASES

INNER FACE OF HULL
(Used to show the undercut on Deck 7)